

## PATENT CLAIMS

1. Arrangement for obtaining reliable anchoring of a  
5 threaded implant (3) in bone substance (1), preferably  
dentine, in the human body, the bone substance being  
provided with a hole (2) in whose side wall (2b) it is  
possible to establish an internal threading (1a) which  
10 can cooperate with an external threading (3d, 3d') on  
the implant for reliable anchoring and healing-in of  
the implant in the bone substance, characterized by one  
or a combination of two or all of the following  
alternatives:

- a) the implant threading is arranged, particularly in  
15 the case of soft bone substance, to force the bone  
substance out in essentially radial directions (R) as a  
function of the extent to which the implant is screwed  
into the hole, the implant threading is arranged to  
20 effect greater forcing out of the bone substance at the  
outer parts (2c) of the hole than at the inner parts  
(2d) of the hole, and the degree of forcing out is  
adapted in relation to the softness of the bone  
substance in order to achieve the reliable anchoring,  
b) along at least part of the longitudinal direction  
25 of the implant, the implant threading is given a non-  
circular or eccentric configuration (8a-8i) for the  
purpose of obtaining improved rotational stability in  
soft/weak bone,  
c) the implant is provided with a threading which  
30 comprises a portion (portions) with two or more thread  
spirals (thread entries) which, despite shortening the  
time for screwing the implant into the hole, provide a  
tight threading which permits effective integration  
with the bone substance during the healing-in process.

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2. Arrangement according to Patent Claim 1,  
characterized in that, in the case according to a), the  
implant threading is arranged to ensure that the  
pressure (P, P') between the bone substance and the

implant has essentially a constant or slightly increasing value during the greater part of the operation of screwing the implant into the hole.

5 3. Arrangement according to Patent Claim 1 or 2, characterized in that in the case according to a), the implant threading comprises a portion (3b) whose thread (3d) has a slight conical narrowing towards the free end (3a) of the implant and extends along most or part  
10 of the length (L) of the implant.

4. Arrangement according to Patent Claim 1, 2 or 3, characterized in that the front portion (tip) of the implant is designed with a conical thread (3e) which  
15 has a conicity essentially exceeding the conicity of the slightly conical thread (3d).

5. Arrangement according to any of the preceding patent claims, characterized in that in the case  
20 according to a), the conicity of the slightly conical thread is chosen between 0.1 - 0.4 mm or has an angle of inclination ( $\alpha$ ) of about 0.5 - 2°, and/or the thread conicity of the thread at the said portion/tip (3a) is of the order of 0.4 - 0.8 mm or with an angle of  
25 inclination ( $\beta$ ) of about 10 - 15°, and the portion/tip has a length or height (h) of about 10 - 30% of the length (L) of the threaded part of the implant.

6. Arrangement according to any of the preceding  
30 patent claims, characterized in that in case a), an implant with slight conicity of the threading along the longitudinal direction (L) of the implant cooperates with a circular cylindrical hole (2) in the bone (1).

35 7. Arrangement according to Patent Claim 1, characterized in that in the case according to b), the non-circularity or eccentricity is intended to substantially increase the rotational stability of the

implant in the recently inserted state or the incorporated state of the implant.

8. Arrangement according to Patent Claim 7, characterized in that the implant is arranged with a minimum diameter ( $D'$ ) which corresponds to or is slightly greater, for example 1 - 5% greater, than the diameter ( $d$ ) of the hole.
9. Arrangement according to Patent Claim 1 or any of Patent Claims 7 - 8, characterized in that the tip or free end of the implant has a circular or concentric thread (3e) which merges gradually into a non-circular or eccentric thread on the remaining part or parts of the implant.
10. Arrangement according to Patent Claim 1 or any of Patent Claims 7 - 9, characterized in that the peripheries of the different non-circular or eccentric thread cross-sections have bevelled corners (12) in order to avoid sharp corners.
11. Arrangement according to Patent Claim 1 or any of Patent Claims 7 - 10, characterized in that the non-circularity is arranged such that areas of maximum diameter are displaced in the peripheral direction from one thread turn (10) to the next thread turn (11).
12. Arrangement according to Patent Claim 1, characterized in that in the case according to c), it is intended to counteract deformation or breaking-up of fine bone trabeculae which surround the hole in the bone.
13. Arrangement according to Patent Claim 1, 11 or 12, characterized in that the number of thread spirals/thread entries is two, three or four.

14. Arrangement according to Patent Claim 1, 11, 12 or 13, characterized in that the number of thread spirals/thread entries is adapted to the number of cutting edges (5a, 5b, 5c, 5d) on the implant so that symmetrical cutting forces are obtained.
15. Arrangement according to Patent Claim 1, 11, 12, 13 or 14, characterized in that two thread spirals are arranged on the implant together with two or four cutting edges, or in that three thread spirals are arranged together with three cutting edges, etc.